

Application Serial No: 10/560,375

Responsive to the Office Action mailed on: October 9, 2007

REMARKS

This Amendment is in response to the final Office Action mailed on October 9, 2007. Claim 1 is amended editorially and is supported, for example, in the specification on page 10, line 26-page 11, line 8 and Figure 2. No new matter is added. Claims 1-9 are pending.

§102 Rejections:

Claims 1, 6 and 8 are rejected as being anticipated by Von Behren (US Patent No. 6,558,324). This rejection is traversed.

Claim 1 is directed to an ultrasonic diagnostic apparatus that requires, among other features, a tomographic image processing part that forms a tomographic image and a tissue characteristic image processing part that forms a tissue characteristic image representing a physical characteristic of a tissue of the subject through analysis of the reception signal of plural frames including at least one contraction and/or expansion period of the tissue. Claim 1 also requires a control means that, during an operation of ultrasonic wave transmission/reception, allows the tomographic image to be renewed in an arbitrary cycle, while allowing the tissue characteristic image corresponding to at least one contraction and/or expansion period of the tissue to be renewed in a cycle different from the cycle for the tomographic image, and allows an arbitrary one of the tissue characteristic images that have been acquired previously and one of the tomographic images that is in synchronization with the tissue characteristic image to be read out from the memory means, respectively and displayed by the display means. An advantage of having a control means structurally configured to renew the tissue characteristic image in a cycle corresponding to at least one contraction and/or expansion period of the tissue is that it becomes easier to display a superimposed tomographic image and tissue characteristic image in conformity with each other in terms of time-phase and positional relationships, thereby enabling an easy and detailed observation of a relationship between a structure and a characteristic of a subject tissue. Moreover, since the analysis of a physical characteristic of a tissue is performed based on data obtained during a period including the most contracted condition and the most expanded condition of the tissue, it

Application Serial No: 10/560,375

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is possible to calculate a precise characteristic of the tissue based on the largest deformation with minimum noise.

Von Behren does not disclose or teach or suggest these features. In particular, nowhere does Von Behren disclose or suggest a control means that is structurally configured to have the elasticity image renewed in a cycle corresponding to at least one contraction and/or expansion period of the tissue. Also, nowhere does Von Behren disclose or suggest a control means that is structurally configured to allow an arbitrary one of the elasticity images that have been acquired previously and one of the tomographic images that is in synchronization with the elasticity image to be read out from the memory means, respectively and displayed by the display means. Von Behren is directed to an ultrasonic imaging method that discloses calculating an elasticity value based on an instantaneous displacement value between two points using displacement and elasticity arrays $D(i, j, k)$, $E(i, j, k)$ as well as a frame data array $r(i, j, k)$. The rejection interprets the elasticity image as the tissue characteristic image and B-mode image as the tomographic image of claim 1. Both the elasticity image determined by $E(i, j, k)$ and the tomographic image determined by $r(i, j, k)$ have a common refresh rate and are only approximately in conformity with each other in terms of time-phase and positional relationships in order to observe a temporal alteration of deformation (see column 8, line 32-column 9, line 45). The tomographic image is not in synchronization with an elasticity image that is renewed in a cycle corresponding to at least one contraction and/or expansion period of the tissue, as required by claim 1. Thus, Von Behren does not disclose or suggest a control means that is structurally configured to include these features of claim 1. For at least these reasons claim 1 is not suggested by Von Behren. Claims 6 and 8 depend from claim 1 and should be allowed for at least the same reasons.

§103 Rejections:

Claims 2-5 are rejected as being unpatentable over Von Behren in view of Varghese (US Patent No. 6,749,571) and further in view of Selzer (US Patent No. 6,979,294). This rejection is traversed. Claims 2-5 depend from claim 1 and should be

Application Serial No: 10/560,375
Responsive to the Office Action mailed on: October 9, 2007

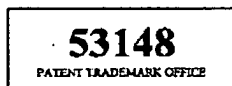
allowed for at least the same reasons described above. Applicants do not concede the correctness of this rejection.

Claim 7 is rejected as being unpatentable over Von Behren in view of Nightingale (US Patent No. 6,371,912). This rejection is traversed. Claim 7 depends from claim 1 and should be allowed for at least the same reasons described above. Applicants do not concede the correctness of this rejection.

Claim 9 is rejected as being unpatentable over Von Behren in view of Seward (US Patent No. 6,398,736). This rejection is traversed. Claim 9 depends from claim 1 and should be allowed for at least the same reasons described above. Applicants do not concede the correctness of this rejection.

Conclusion:

Applicants respectfully assert that claims 1-9 are in condition for allowance. If a telephone conference would be helpful in resolving any issues concerning this communication, please contact Applicants' primary attorney-of record, Douglas P. Mueller (Reg. No. 30,300), at (612) 455-3804.



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Respectfully submitted,

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